NorthMet Mining Project and Land Exchange

Supplemental Draft Environmental Impact Statement

November 2013

EXECUTIVE SUMMARY

Prepared by

Minnesota Department of Natural Resources
United States Army Corps of Engineers
United States Forest Service

Minnesota DEPARTMENT OF NATURAL RESOURCES

US Army Corps of Engineers St. Paul District

FOREST SERVICE US DEPARTMENT OF AGRICULTURE

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INTRODUCTION

PolyMet Mining, Inc. (PolyMet) is proposing to develop the NorthMet copper-nickel-platinum group elements (PGE) mine and associated processing facilities in northeastern Minnesota. A land exchange is also proposed with the United States Forest Service (USFS) to eliminate a conflict between PolyMet's desire to surface mine and the United States' surface rights, including USFS administration of National Forest System (NFS) land.

- The mining proposal is known as the *NorthMet Project Proposed Action* consisting of the Mine Site, Transportation and Utility Corridor, and Plant Site. The NorthMet Project Proposed Action would represent the first copper-nickel-PGE mine in Minnesota. Figure 1 shows the general location of the NorthMet Project area and its geographic relationship within the northeast Minnesota region.
- The land exchange proposal is known as the *Land Exchange Proposed Action* consisting of USFS conveyance of Superior National Forest lands encompassing the Mine Site and surrounding lands to PolyMet, and USFS acquisition from PolyMet of up to five tracts of private lands within the Superior National Forest proclamation boundary. Figure 1 shows the general location of the Land Exchange area and its geographic relationship within the northeast Minnesota region.

This Executive Summary provides an overview of the Supplemental Draft Environmental Impact Statement (SDEIS). The purpose of the SDEIS is to describe the process undertaken to evaluate the issues related to and predicted effects of the NorthMet Project Proposed Action and Land Exchange Proposed Action and alternatives. For complete discussions and analyses related to the potential effects on environmental, cultural, and socioeconomic resources, please refer to their respective sections in the SDEIS.

As Co-lead Agencies, the Minnesota Department of Natural Resources (MDNR), United States Army Corps of Engineers (USACE), and USFS have jointly prepared this SDEIS under the National Environmental Policy Act (NEPA) for the two federal agencies and under the Minnesota Environmental Policy Act (MEPA) for the MDNR. The SDEIS describes the process the Co-lead Agencies undertook to evaluate the effects of the NorthMet Project Proposed Action, the Land Exchange Proposed Action, and alternatives developed during the process.

The NorthMet Project Proposed Action would require a number of federal, state, and local permits, including a Department of the Army (DA) permit pursuant to Section 404 of the Clean Water Act (CWA) for the discharge of dredged or fill materials into waters of the United States. The USACE has determined that issuance of a DA permit for this project would be a major federal action that has the potential to significantly affect the quality of the human environment and, therefore, pursuant to NEPA, requires preparation of an EIS.

In addition, the NorthMet Project Proposed Action would require a Permit to Mine from the MDNR, which requires the preparation of a state EIS, with the MDNR as the Responsible Governmental Unit pursuant to MEPA. The State of Minnesota's environmental review process and ultimately the EIS are intended to inform the subsequent permitting and approval

processes and describe mitigation measures that may be available.

NFS lands are owned by the United States of America and administered by the USFS, within the U.S. Department of Agriculture. The NorthMet Deposit containing copper-nickel-PGE minerals is located on NFS lands within the Superior National Forest. These mineral rights were reserved by the original private owner when the United States purchased the land for National Forest purposes under the authority of the Weeks Act. Those mineral interests remain privately owned and are now controlled by PolyMet. The USFS does not believe that the mineral reservation gives PolyMet a right to surface mine NFS land to access the minerals. In addition, allowing private surface mining would be inconsistent with USFS legal mandates for acquiring and managing these lands.

To eliminate this conflict between PolyMet's desire to surface mine and the United States' rights, including the USFS' administration of the NFS land, PolyMet proposed a land exchange with the USFS where it would acquire the NFS land (surface estate) in exchange for currently privately owned lands that would become part of the NFS. The Land Exchange Proposed Action would reunify the severed mineral and surface estates of the NorthMet Deposit (see Figure 1). Without this exchange, under the described conditions, the surface mining operation desired by PolyMet would not take place. For this reason, the Land Exchange Proposed Action is a connected action to the NorthMet Project Proposed Action.

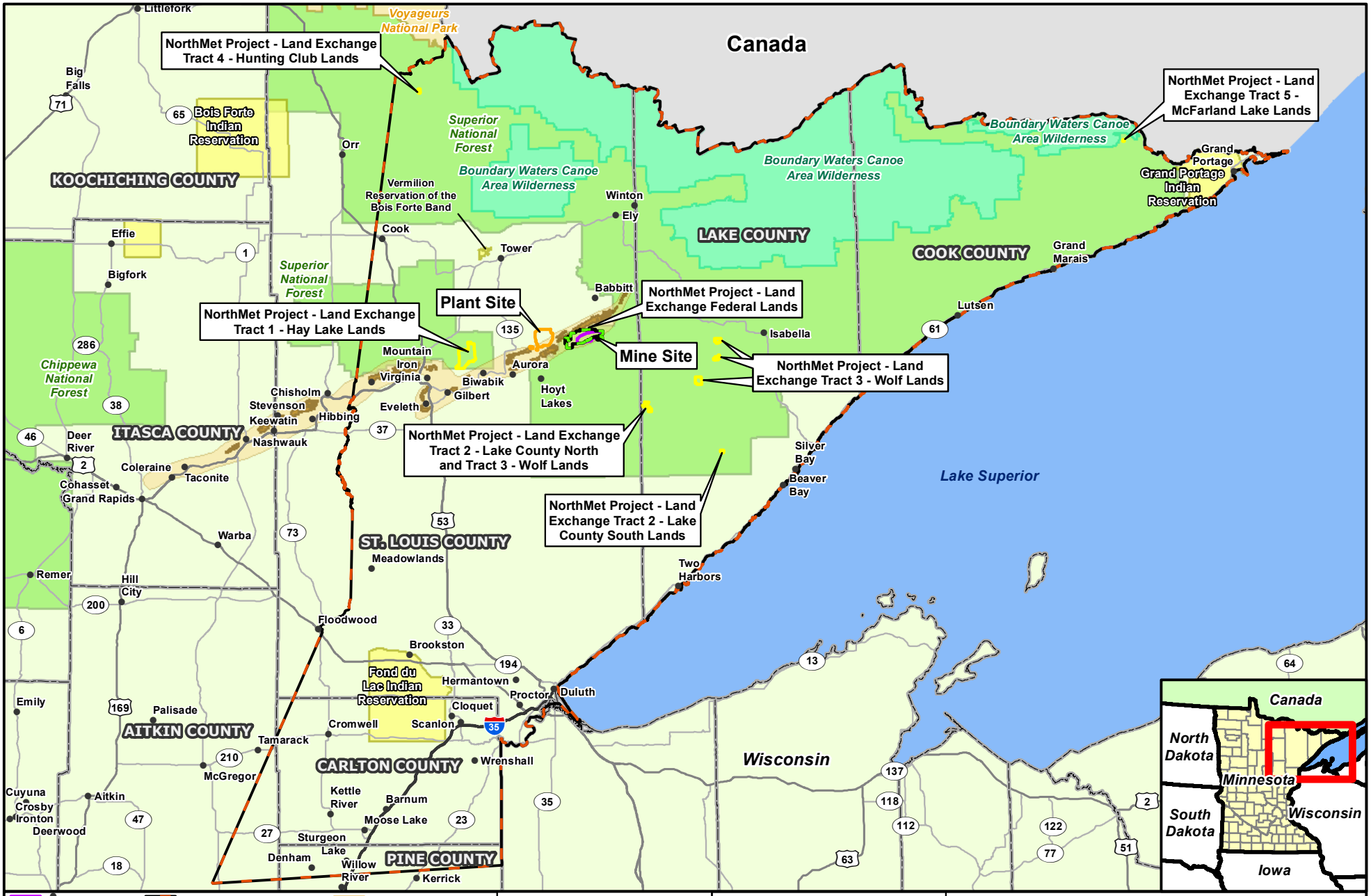

Figure 1
NorthMet Project and Land Exchange Area
NorthMet Mining Project and Land Exchange SDEIS
Minnesota

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NEPA AND MEPA PROCESS

Development of the SDEIS

As a major federal and state action, the NorthMet Project Proposed Action and Land Exchange Proposed Action trigger the need for an EIS under NEPA and MEPA. The purpose of the EIS is to inform the public and decision-makers of the proposed actions, assess potential environmental consequences, identify potential mitigation measures and reasonable and feasible alternatives, and to address the no-action alternative. The NEPA/MEPA process provides for consultation and/or solicitation of comments from federal and state agencies, Native American Tribes, and the general public.

The Co-lead Agencies (the MDNR, USACE, and, as of 2010, USFS) have engaged in a joint federal-state process to consider PolyMet's project proposals as they have evolved over time based on external input and agency reviews of draft designs (see Figure 2).

Between 2005 and 2009, the USACE and MDNR evaluated the original NorthMet Project Proposed Action. This process culminated in October 2009 with the publication of the NorthMet Project Draft EIS (DEIS) that analyzed the project as it was then proposed by PolyMet. After issuing the DEIS, the Co-lead Agencies—responding to public, other state and federal agencies' (including the United States Environmental Protection Agency [USEPA]), and tribal comments and concerns—developed an alternative in consultation with PolyMet that sought to resolve several major environmental concerns and permitting barriers raised during the DEIS process. This alternative was subsequently adopted by PolyMet and became the current NorthMet Project Proposed Action.

In 2010, the USFS joined as a third Co-lead Agency for the purpose of analyzing the Land Exchange Proposed Action as a connected action. Under state and federal regulations, multiple actions or projects that are connected actions must be considered in total in preparing an EIS. Coincident review of these connected actions prompted the Co-lead Agencies' decision to prepare an SDEIS. Where considered in total, the NorthMet Project Proposed Action and the Land Exchange Proposed Action constitute the Proposed Connected Actions in the SDEIS. Key issues addressed in the SDEIS include the effects of the NorthMet Project Proposed Action and the Land Exchange Proposed Action on water resources, air quality, wetlands, geotechnical stability, cultural resources, and socioeconomics. This SDEIS is being used to solicit public comment on the proposed actions and key issues. The Co-lead Agencies will consider these comments in preparation of the Final EIS (FEIS).

Structure of the SDEIS

This Executive Summary summarizes the SDEIS, which provides a full description and analysis of the proposed NorthMet Mining Project and Land Exchange and alternatives as outlined below:

- Chapter 1.0 (Introduction) describes the purpose and need for the NorthMet Mining Project and Land Exchange, the regulatory framework, and agency roles and responsibilities.
- Chapter 2.0 (EIS Development) provides a detailed discussion of the process the Co-lead Agencies have undertaken to develop the SDEIS, including the current

NorthMet Project Proposed Action and need for the Land Exchange Proposed Action, and alternatives.

- Chapter 3.0 (Proposed Action and Project Alternatives) describes the Proposed Action and alternatives, including the No Action Alternative. Additionally, the chapter describes those alternatives considered but eliminated from detailed consideration for both the NorthMet Project Proposed Action and the Land Exchange Proposed Action.
- Chapter 4.0 (Affected Environment) summarizes the existing conditions of resources that may be affected by the NorthMet Project Proposed Action and Land Exchange Proposed Action, including the land and its physical, biological, cultural, socioeconomic, and recreational resources.
- Chapter 5.0 (Environmental Consequences) presents the direct and indirect environmental effects of the NorthMet Project Proposed Action and the Land Exchange Proposed Action and their alternatives.
- Chapter 6.0 (Cumulative Effects) describes the cumulative effects on the surrounding environment and uniquely affected communities with regard to the NorthMet Project Proposed Action and the alternatives for the Land Exchange Proposed Action.
- Chapter 7.0 (Comparison of Alternatives and Other Considerations) contains the comparison of the Proposed Connected Actions and alternatives.
- Chapter 8.0 (Major Differences of Opinion) describes the Tribal Cooperating Agencies' major differences of opinion on aspects of this SDEIS.
- Appendices and other information are provided with the SDEIS, including the list of preparers for the production of the SDEIS, responses to thematic DEIS comments, tribal agency supporting materials, index, acronyms and abbreviations, and glossary.

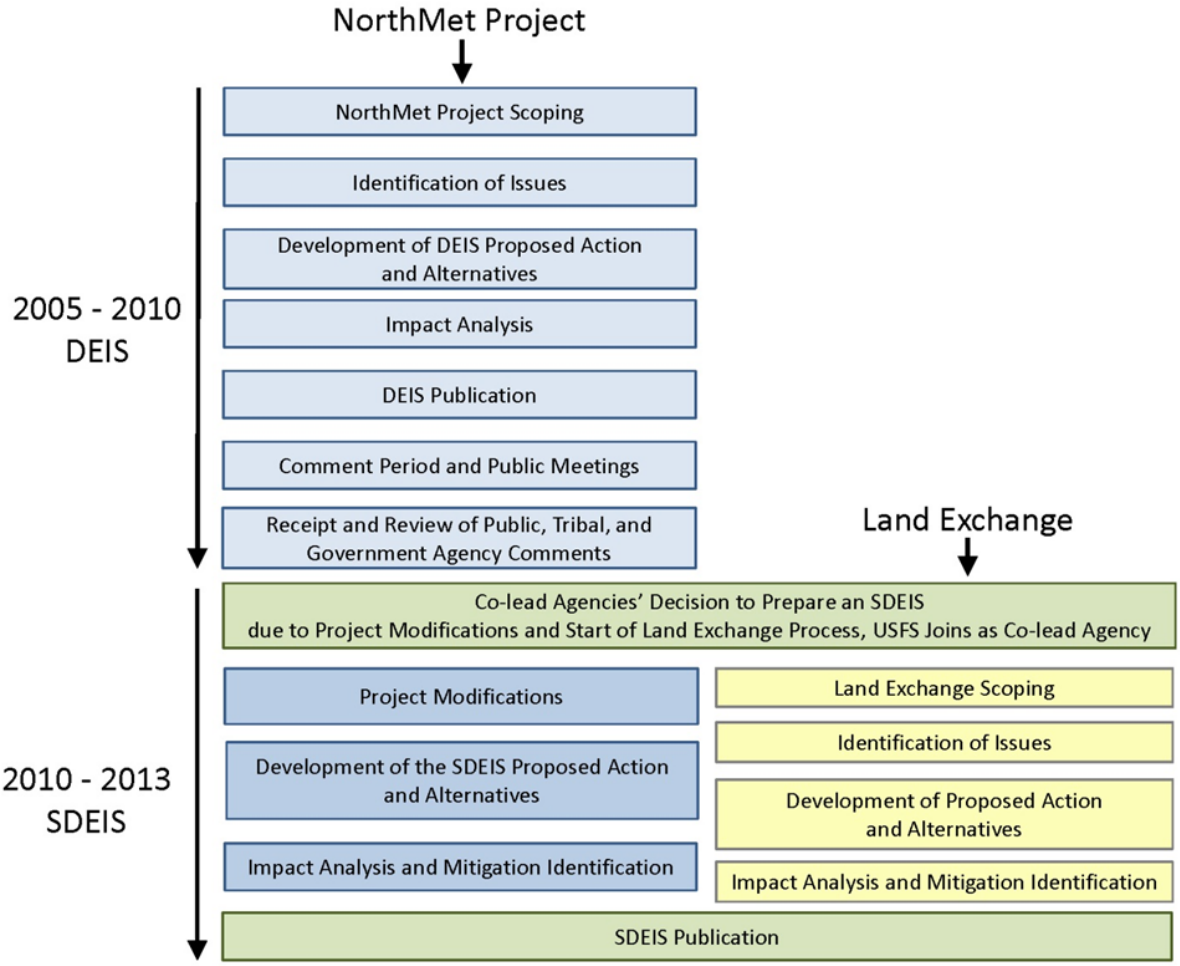

Figure 2 NEPA/MEPA Process, 2005 to Present

Agency Roles in the SDEIS

Co-lead Agencies

The MDNR, USACE, and USFS are Co-lead Agencies for the joint state-federal EIS and, therefore, are responsible for the content of the SDEIS and have final authority over the language used in the document.

Cooperating Agencies

The USEPA, under Section 309 of the Clean Air Act, is required to review and publically comment on all federal EIS documents and publish its review in the public record.

Along with the USEPA, the Bois Forte Band of Chippewa, Grand Portage Band of Lake Superior Chippewa, and the Fond du Lac Band of Lake Superior Chippewa (the Bands) have been invited by the Co-lead Agencies to participate in the EIS process and agreed to participate as formal Cooperating Agencies under NEPA. The NorthMet Project area and Land Exchange parcels are located within the 1854 Ceded Territory, within which the Bands reserve hunting, fishing, and gathering (usufructuary) rights. The Great Lakes Indian Fish and Wildlife Commission and the 1854 Treaty Authority have assisted the Bands in addressing issues with the

NorthMet Mining Project and Land Exchange.

Other Agencies

Other federal and state agencies participating in development of the SDEIS include, but are not limited to, the Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Health, and the United States Fish and Wildlife Service.

PURPOSE OF THE NORTHMET PROJECT AND LAND EXCHANGE

The purpose of the NorthMet Project and Land Exchange is multifaceted:

- PolyMet: The NorthMet Project and Land Exchange would allow PolyMet to exercise its mineral lease rights to mine the NorthMet Deposit.
- USACE and MDNR: The NorthMet Project Proposed Action would produce base and precious metal precipitates and flotation concentrates from ore mined at the NorthMet Deposit by uninterrupted operation of the former LTV Steel Mining Company (LTVSMC) processing plant. The processed resources would help meet domestic and global demand by sale of these products to domestic and world markets.
- USFS: The Land Exchange Proposed Action is intended to resolve the conflict between the surface estate owned by the United States and the private mineral estate.

PROPOSED CONNECTED ACTIONS

The Proposed Connected Actions includes the NorthMet Project Proposed Action and the Land Exchange Proposed Action as described below.

NorthMet Project Proposed Action

Located on the eastern flank of the Mesabi Iron Range, the proposed NorthMet Mine would be located 6 miles south of the City of Babbitt and the processing plant would be 6 miles north of the City of Hoyt Lakes in St. Louis County, Minnesota. The Mesabi Iron Range region has been mined for iron ore and taconite (i.e., lower-grade iron ore) for over 100 years (see Figure 3). The entire mine is within the municipal boundaries of the City of Babbitt and the processing plant is mostly located within the municipal boundaries of the City of Hoyt Lakes (see Figure 4). Several other communities, including Aurora, Virginia, Ely, Hibbing, Eveleth, and Biwabik that are located within St. Louis and Lake counties, are within 50 miles of the NorthMet Project area. In addition, the project is about 50 miles southeast of Voyageurs National Park and 20 miles south of the Boundary Waters Canoe Area Wilderness (BWCAW).

A substantial portion of the NorthMet Project Proposed Action would reuse a former mining plant site (LTVSMC processing plant) for mineral processing, and use the existing Tailings Basin for tailings disposal.

Mining would occur on what is referred to as the Mine Site, which is relatively undisturbed; however, there is previously logged land nearby. The Mine Site would be connected to the processing facilities and tailings basin (Plant Site) by an existing (upgraded) rail line, the Dunka Road, and a water line, collectively referred to as the Transportation and Utility Corridor. The active Northshore Mine (taconite iron ore mine) is located about a mile north of the Mine Site.

There would be three distinct phases to the NorthMet Project Proposed Action:

- Construction would last for approximately 18 months and would include land clearing, building renovation and construction, stockpile preparation, and utility upgrades.
- Operations would last approximately 20 years, and would include ore mining and processing, continued construction, and progressive reclamation.
- Final land reclamation, closure, and post-closure maintenance would occur after mining and would include infrastructure removal, maintenance, monitoring, and, if proven effective, transitioning from mechanical to non-mechanical water treatment. The objective of closure is to provide mechanical or non-mechanical treatment for as long as necessary to meet regulatory standards at applicable groundwater and surface water compliance points. Both mechanical and non-mechanical treatment would require periodic maintenance and monitoring activities. Mechanical water treatment is part of the modeled NorthMet Project Proposed Action for the duration of the simulations (200 years at the Mine Site, and 500 years at the Plant Site). The duration of the simulations was determined based on capturing the highest predicted concentrations of the modeled NorthMet Project Proposed Action. It is uncertain how long the NorthMet Project Proposed Action would require water treatment, but it is expected to be long term; actual treatment requirements would be based on measured, rather than modeled, NorthMet Project water quality performance, as determined through required monitoring.

An overview of the NorthMet Project Proposed Action construction, operations, closure, and post-closure maintenance is provided below.

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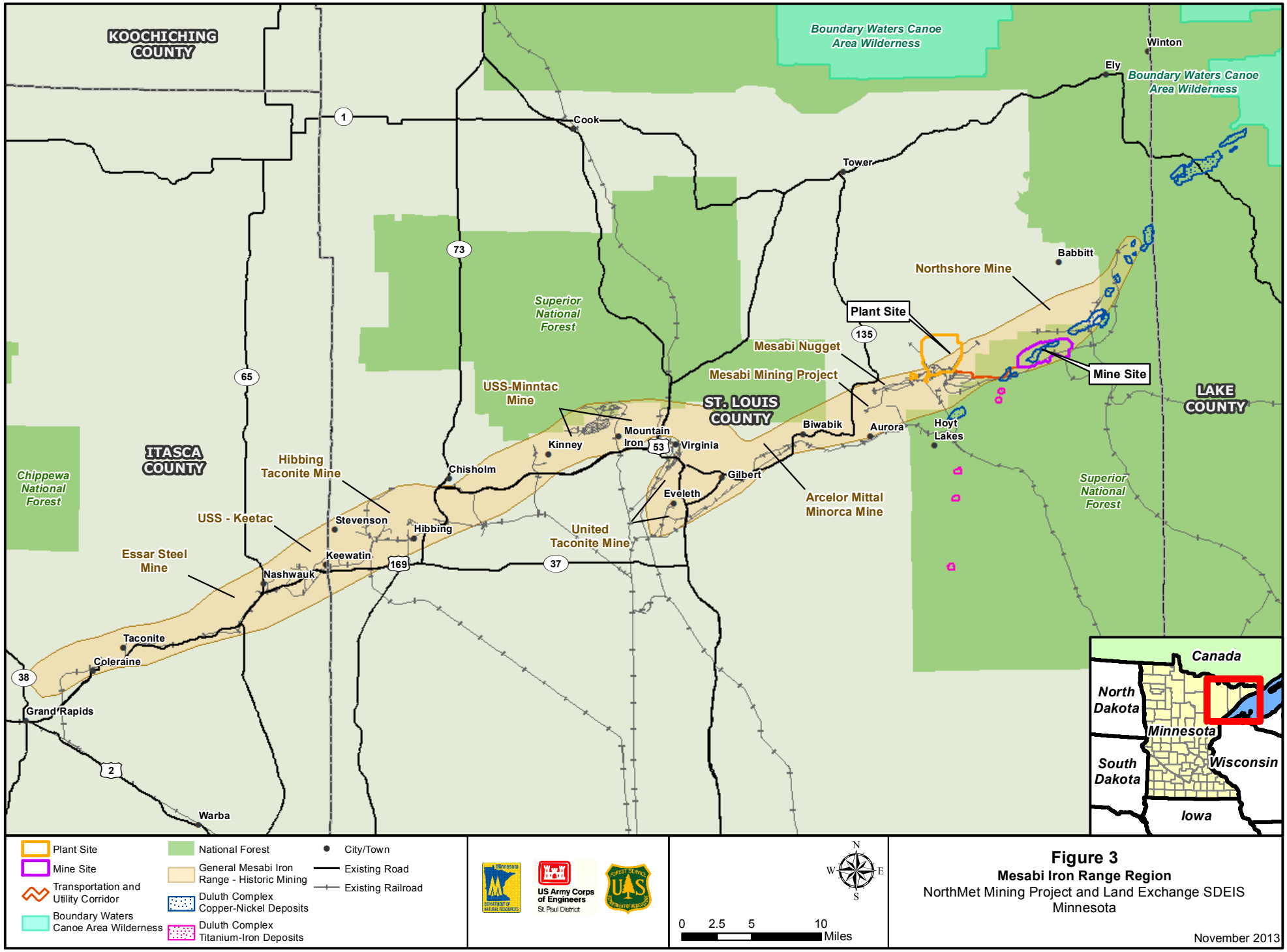

Figure 3
Mesabi Iron Range Region
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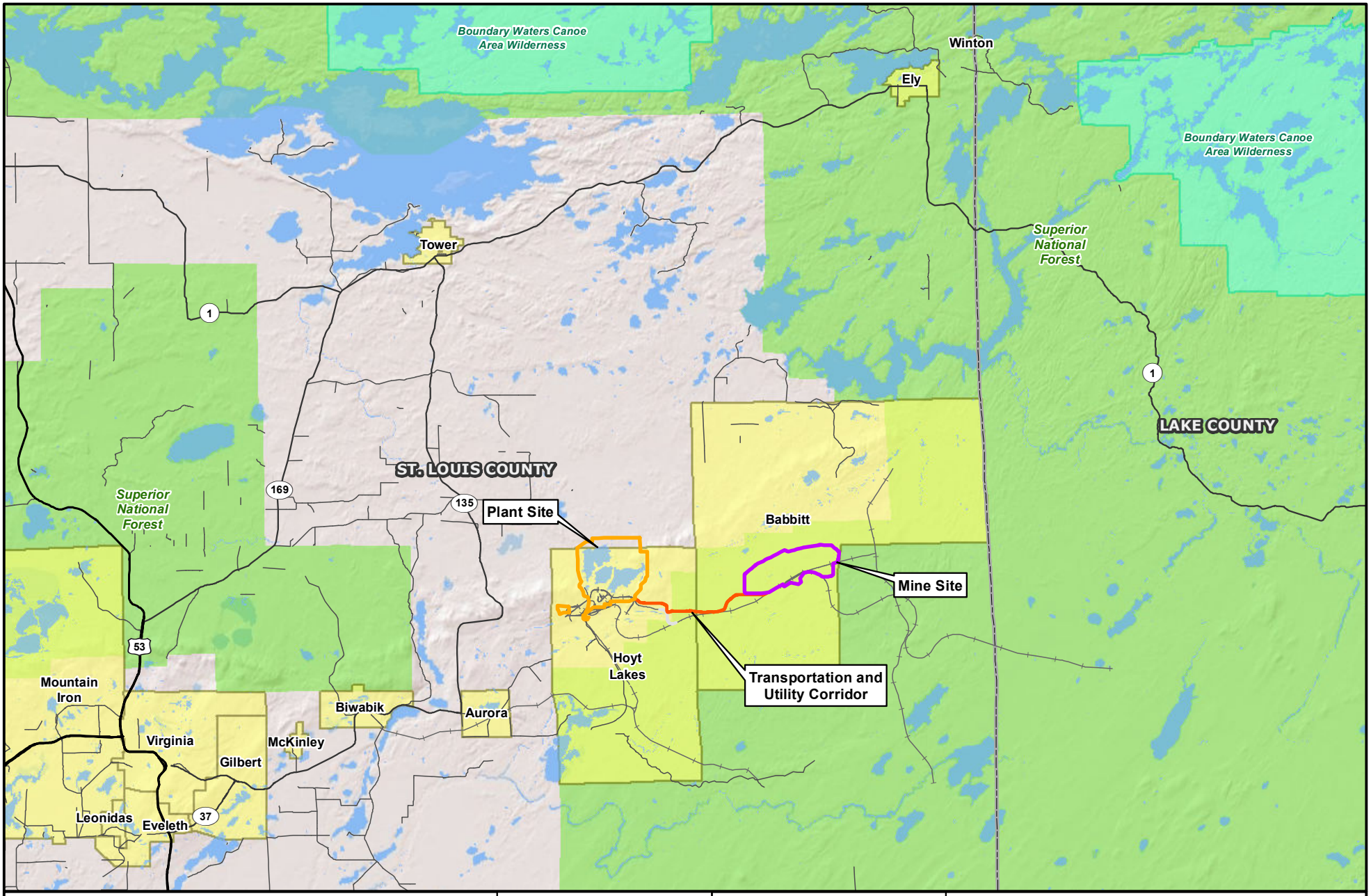

Figure 4
Area Municipalities
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Construction

Construction would begin about 18 months before mining and processing. Geochemical characterization has identified four types of waste rock that would be managed based on their potential to oxidize and release various solutes (1 being the lowest potential and 4 being the highest). In preparation for mining, existing vegetation would be cleared and overburden (i.e., soils and rock) would be removed. Additionally, a Mine Site Wastewater Treatment Facility (WWTF), Category 1 Stockpile groundwater containment system, and liner systems for the Category 2/3 Stockpile and Category 4 Stockpile would be constructed. An existing road, railroad, and utilities would receive minor upgrades. These transportation routes and utilities would connect the Mine Site to the Plant Site, which are about 8 miles apart.

At the Plant Site, existing buildings would be refurbished and new buildings would be constructed. A portion of the existing LTVSMC Tailings Basin would be used as the base for a new NorthMet Project Tailings Basin. A seepage containment system would be installed around the northern and western sides of the Tailings Basin. A separate double-lined facility would be constructed to contain residue from the hydrometallurgical process. A mechanical Wastewater Treatment Plant (WWTP) (using reverse osmosis [RO]) would be constructed.

Mining Operations

The mining operations would involve the use of conventional open-pit surface mining methods such as blasting and the excavation of rock from the NorthMet Deposit. The NorthMet Deposit is a low- to medium-quality copper-nickel-PGE deposit with low sulfide content. The Life of Mine (i.e., the duration of mining operations) would be 20 years, over which time approximately 533 million tons of waste rock and ore would be removed from the NorthMet Deposit. This includes a total of 225 million tons of ore and 308 million tons of waste rock. The average ore processing rate would be up to 32,000 tons per day.

Mining would be conducted in three open pits. The East Pit and West Pit would be mined simultaneously through the first 11 years of the mine life (see Figure 5). Mining would cease at the East Pit at approximately year 11 and continue at the West Pit until year 20 (see Figure 6). The Central Pit would be mined between years 11 and 16 and would ultimately be combined with the East Pit. The maximum depths of the pits below the original surface level would be 630 feet (ft) for the East Pit (at year 11), 356 ft for the Central Pit (at year 16), and 696 ft for the West Pit (at year 20).

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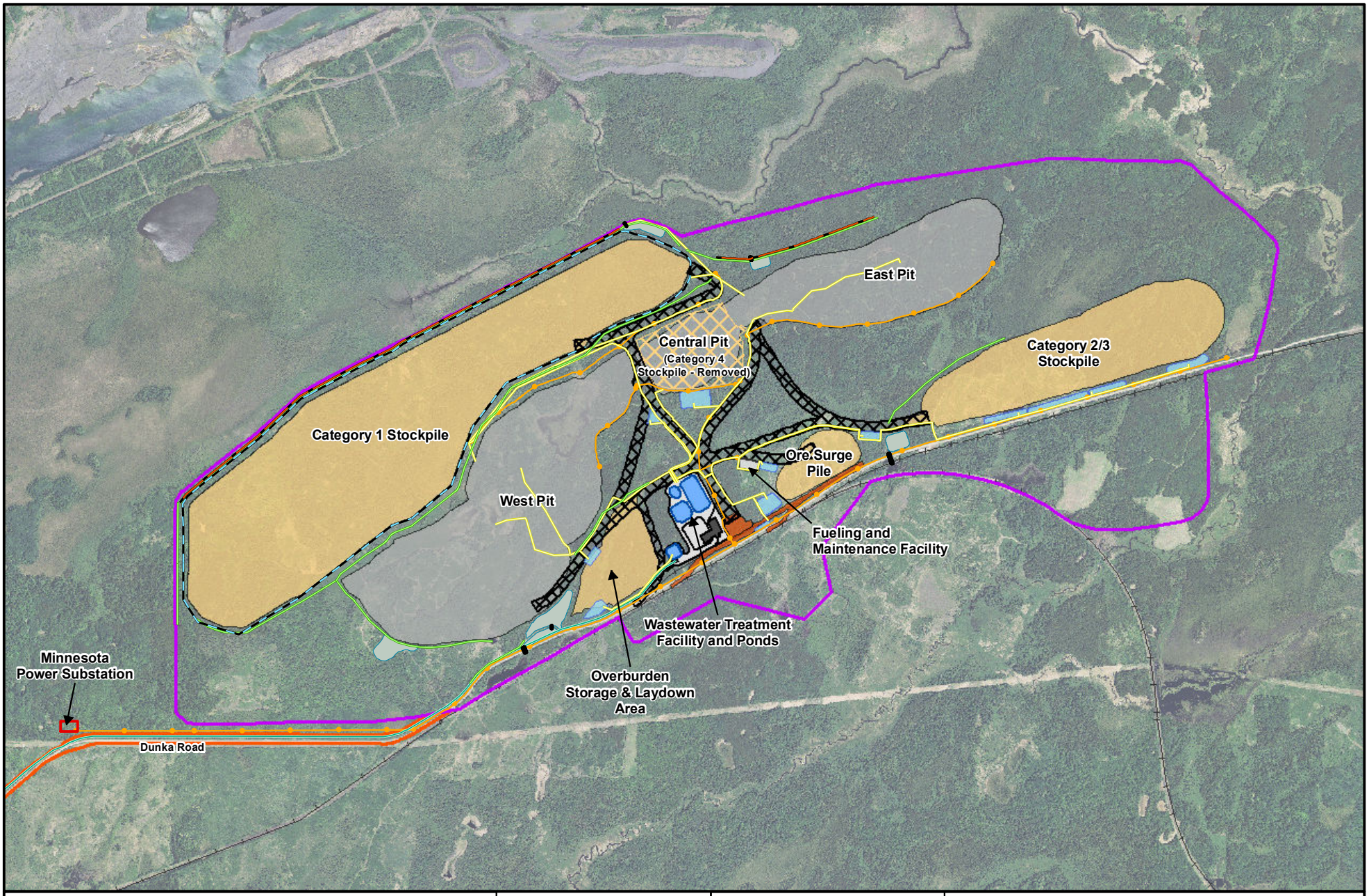

Figure 5

Mine Site Plan - Year 11

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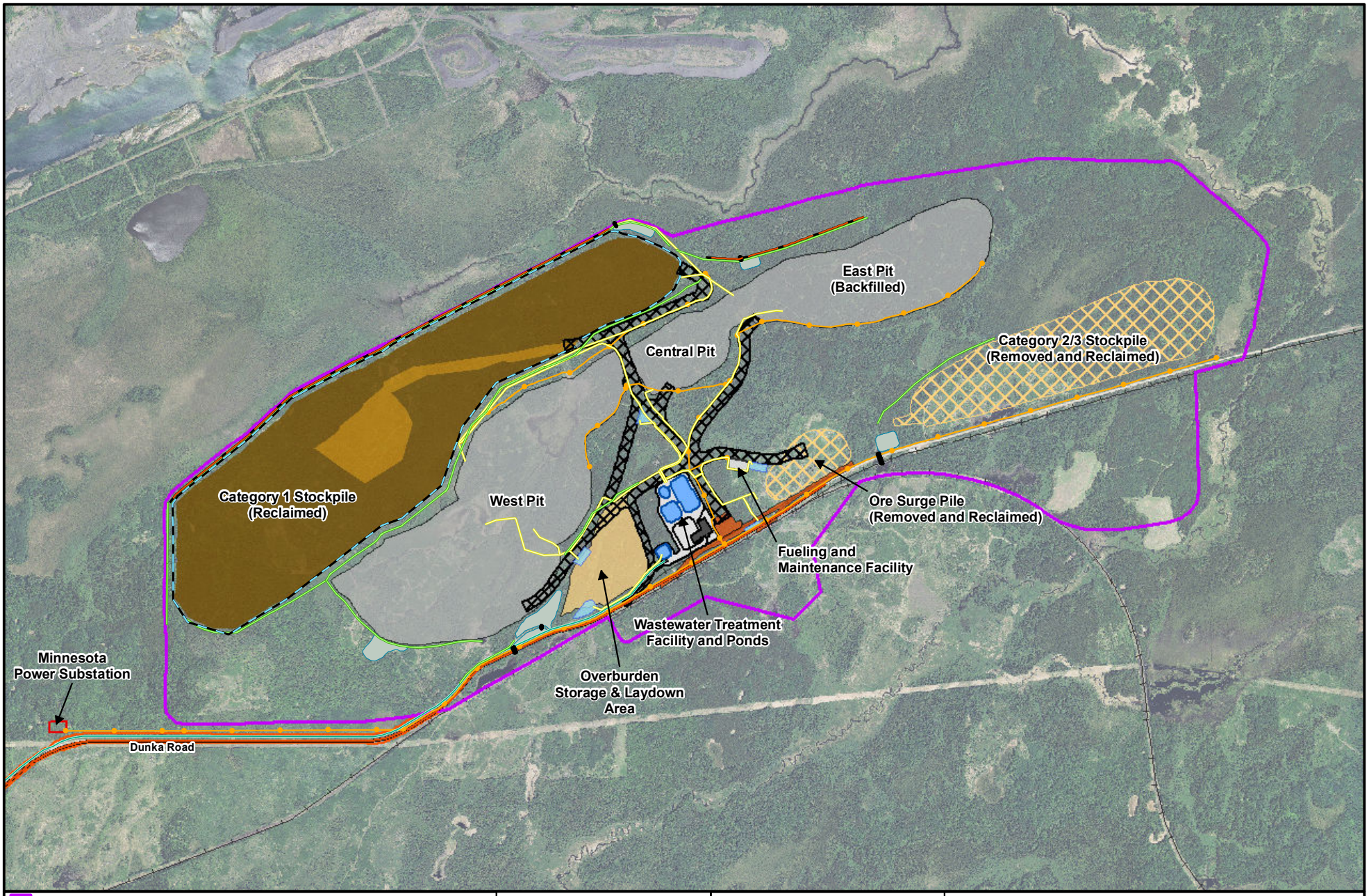

Figure 6

Mine Site Plan - Year 20

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Until the completion of mining in the East Pit (approximately year 11), waste rock would be hauled to one of the following stockpiles at the Mine Site:

- permanent Category 1 Stockpile,
- temporary Category 2/3 Stockpile, or
- temporary Category 4 Stockpile.

After mining planned at the East Pit ends by year 11, the waste rock in the temporary Category 2/3 and 4 stockpiles would be moved into the East Pit for subaqueous disposal. This option is the preferred method of disposal for the more reactive waste rock. Waste rock generated from ongoing mining in the West Pit and Central Pit after year 11 would be directly disposed of in the East Pit. Some Category 1 waste rock would continue to be placed on the Category 1 Stockpile until year 13. Mining operations would continue in the West Pit until year 20, while backfilling the combined East Central Pit with waste rock.

Water control systems would be constructed to capture water that has contacted surfaces disturbed by mining operations, water collected on stockpile liners, and water collected by the groundwater containment systems (i.e., collectively referred to as process water). Process water would be treated at a mechanical WWTF located at the Mine Site and either pumped to the Plant Site Tailings Basin for use as process make-up water or to supplement flooding of the East Pit after backfilling with waste rock.

Processing Operations

Ore would be transported to the Plant Site (see Figure 7) by rail, for crushing and processing. Processing would involve concentration using a flotation method to separate metallic sulfide minerals (ore concentrate) from feldspar and other non-ore minerals (tailings).

Ore concentrate would either be dewatered and shipped off site as copper concentrate and nickel concentrate final products, or the nickel concentrate would be processed in an autoclave (oxidation and leaching method) at the Hydrometallurgical Plant and base/precious metal precipitates would be produced. These precipitates would be shipped off site and sold as final products. Based on the anticipated rate of mining, mineral processing of up to 32,000 tons per day of ore would yield annual production of about 113,000 tons of copper concentrate, 18,000 tons of mixed (nickel/copper) hydroxide, and 500 tons of PGE precipitate.

After passing through a secondary flotation cycle to remove as many sulfide minerals as possible, the tailings would be transferred as slurry to the Tailings Basin. Bentonite clay would be incorporated into the exposed outer side-slopes of the Tailings Basin as it is built up to create a barrier that would limit oxidation of sulfide minerals. This limiting of oxygen transfer would reduce pollutants generated from the Tailings Basin.

Water seepage from the Tailings Basin would be collected by the groundwater containment system and sent to either the Tailings Basin pond or the Plant Site WWTP. Treated water would be used to augment flows in the streams that would otherwise receive reduced flows because of the Tailings Basin groundwater containment system.

Closure and Post-closure Maintenance

In general, the Mine Site area has been designed and would be operated to allow for progressive reclamation. The Category 1 Stockpile would be covered with a geomembrane (plastic) and soils, and the temporary Category 2/3 and 4 stockpiles (containing the most reactive waste rock) would be removed and placed into the East Pit during operations. Eventually, all of the

Category 2/3 and 4 waste rock would be moved to the combined East Central Pit and flooded with water to minimize oxidation to reduce the generation of pollutants.

After mining is completed, the West Pit would be filled with groundwater and surface water to become a pit lake (see Figure 8). The Mine Site mechanical WWTF would be upgraded to include RO and would be maintained to treat pit lake water quality, with a goal of transitioning to a non-mechanical water treatment technology requiring less maintenance over the long term. The water objective of closure is to provide mechanical or non-mechanical treatment for as long as necessary to meet regulatory standards at applicable groundwater and surface water compliance points. Both mechanical and non-mechanical treatment would require periodic maintenance and monitoring activities. Mechanical water treatment is part of the modeled NorthMet Project Proposed Action for the duration of the simulations (200 years at the Mine Site, and 500 years at the Plant Site). The duration of the simulations was determined based on capturing the highest predicted concentrations of the modeled NorthMet Project Proposed Action. It is uncertain how long the NorthMet Project Proposed Action would require water treatment, but it is expected to be long term; actual treatment requirements would be based on measured, rather than modeled, NorthMet Project water quality performance, as determined through required monitoring.

The Plant Site would be closed by removing unnecessary buildings and infrastructure, capping the Hydrometallurgical Residue Facility (double-lined), and adding bentonite amendment and vegetation to the beaches and pond at the Tailings Basin. The seepage collection system and Plant Site WWTP (RO) would remain active for long-term needs, with pilot studies to be conducted to demonstrate the ability to transition to non-mechanical water treatment. The monitoring of water, wetland, vegetation, and other resources would continue. Adaptive management would be implemented, if necessary, to protect the environment for the long term.

Monitoring, Adaptive Management, and Mitigation

One of the key elements of the NorthMet Project Proposed Action is the inclusion of several management plans that identify how PolyMet would monitor environmental conditions to ensure that they would meet all applicable environmental goals set in the permits. Key among these plans is the Adaptive Water Management Plan, which would describe Mine Site and Plant Site water management and under what circumstances design changes would be triggered to the following:

- Category 1 Stockpile Cover System – PolyMet proposes to install a geomembrane cover system to reduce the load of constituents that reach the West Pit via drainage from the Category 1 Stockpile.
- Mine Site WWTF – the WWTF is now proposed to be upgraded to a RO process during closure to manage sulfate concentrations in the effluent.
- Plant Site WWTP – the WWTP would treat Plant Site process water. It is considered an adaptive engineering control because the operating configuration and requirements of the process units within the WWTP or the capacity of the WWTP could be modified to accommodate varying influent streams and discharge requirements.
- Tailings Basin Pond Bottom Cover System – PolyMet proposes to install a

flotation tailings basin pond bottom cover system during reclamation in order to reduce the diffusion of oxygen into the tailings.

Other proposed mitigation measures are also included in the SDEIS and would be a part of the NorthMet Project Proposed Action. These may include measures to reduce fugitive dust and noise, and effects on water quality, wetlands, cultural resources or historic properties, and other resources.

The SDEIS describes these proposed measures and when they would be employed during construction, operations, and closure of the NorthMet Project Proposed Action. Monitoring and modeling would be used to determine the performance of the proposed measures and identify any needed revisions.

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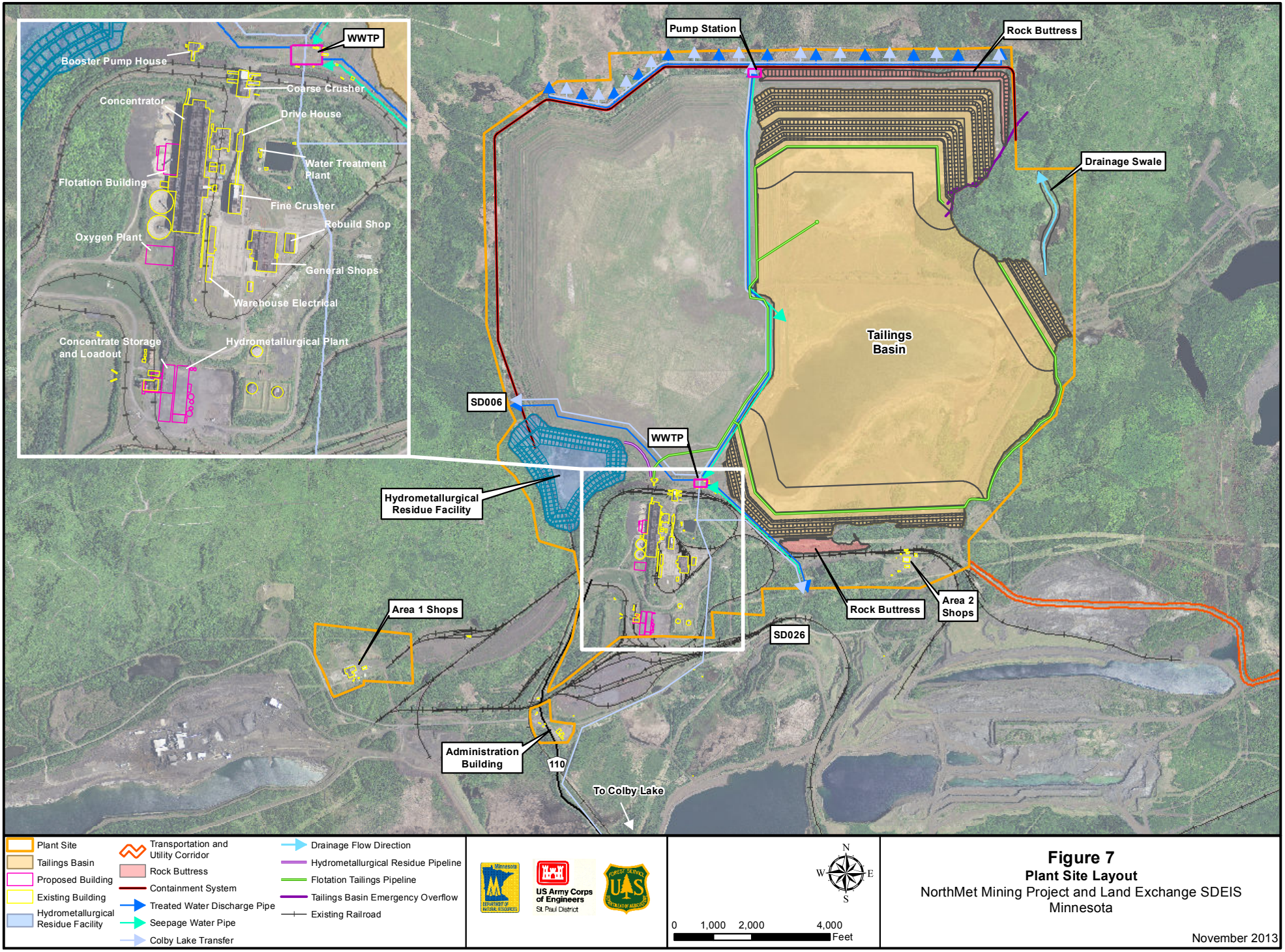

Figure 7
Plant Site Layout
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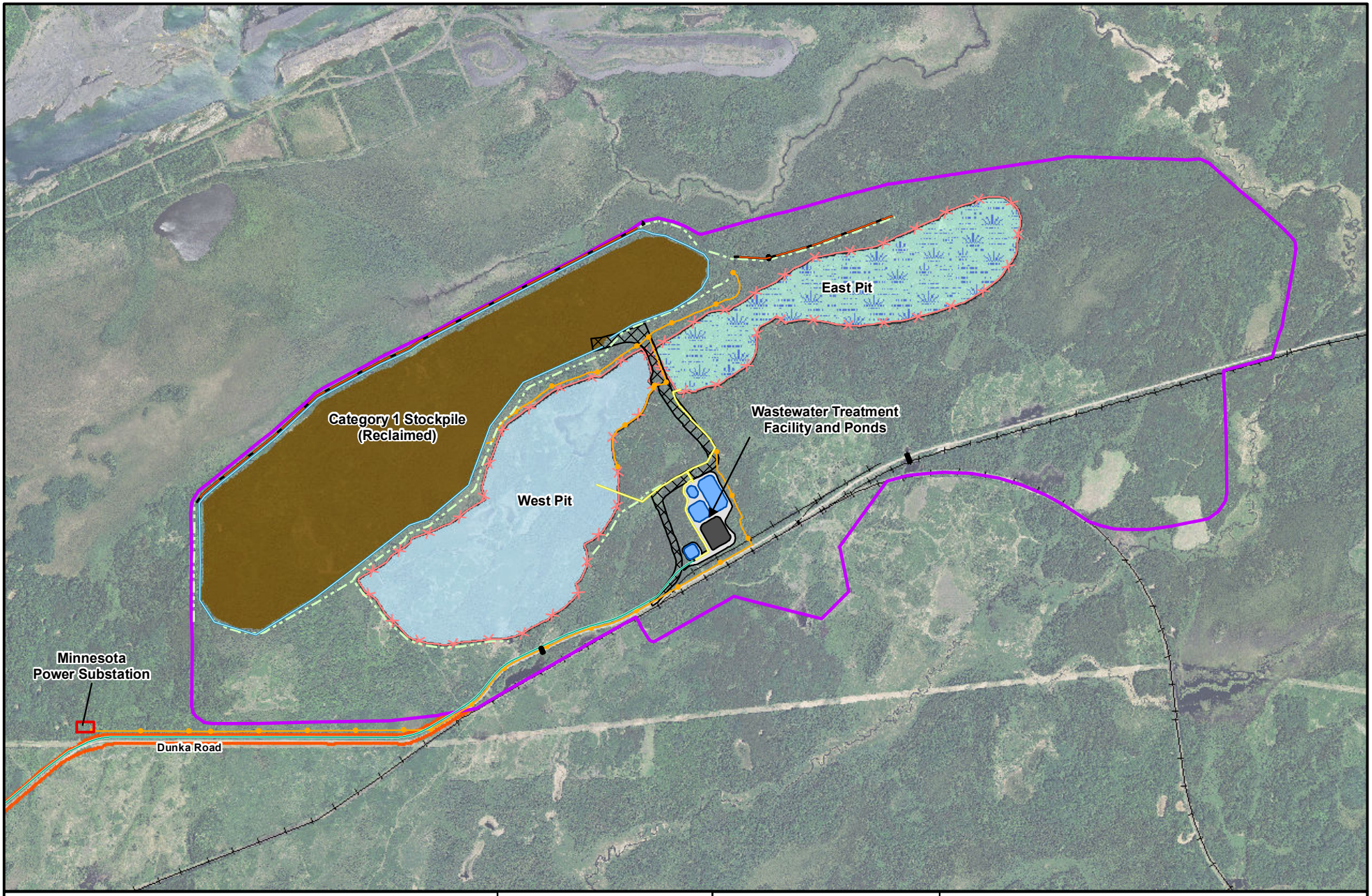

Mine Site
Pit with Backfill and Surface Wetland
Pit Lake
Covered in Previous Years
Haul Road
Transportation and Utility Corridor
Groundwater Containment System
Transmission Line
Stormwater Collection Ditch
Perimeter Dike
Process Water Pipes
Treated Water Pipeline
Fence
Culvert

US Army Corps of Engineers
St. Paul District

N
W E
S

0 500 1,000 2,000 3,000
Feet

Figure 8
Mine Site Plan - Long Term Closure
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Land Exchange Proposed Action

The Land Exchange Proposed Action would involve the transfer of 6,650.2 acres (General Land Office [GLO]) of federal lands from public to private ownership, and up to 6,722.5 acres (GLO) of land from private to public ownership (see Figure 9), depending upon the results of the environmental analysis and real estate appraisals. This information will be presented in the USFS Record of Decision.

Federal Lands

The federal lands proposed to transfer to PolyMet include a large black spruce, tamarack, and cedar wetland, and also contain Mud Lake. Yelp Creek and the Partridge River also flow through the property. These federal lands lie immediately south of the Superior National Forest proclamation boundary and are bounded on the south by the former LTVSMC railroad and Dunka Road, which are features of the NorthMet Project Proposed Action. Legal access to the federal lands is primarily via Dunka Road, which is privately owned and would require an approval for ingress and egress, and the former LTVSMC railroad.

The area includes other privately owned properties to the north and west of the federal lands, which have been surface mined over the years. There are mine pits, waste rock stockpiles, tailings basins, processing facilities, railroad grades, and other general mining facilities throughout the area. A 115-acre, privately owned in-holding within the exterior boundaries of the northwestern portion of the federal lands is not included in the Land Exchange Proposed Action.

Non-federal Lands

The Land Exchange Proposed Action would include up to five tracts (Tract 1 – Hay Lake lands, Tract 2 – Lake County lands, Tract 3 – Wolf lands, Tract 4 – Hunting Club lands, Tract 5 – McFarland Lake lands) of non-federal lands in St. Louis, Lake, and Cook counties that would comprise up to 6,722.5 acres (GLO); however, the final exchange, if approved, could include fewer than 6,722.5 acres (GLO) of non-federal land, depending on the results of the environmental analysis and real estate appraisals. All of the lands proposed for exchange are located within the 1854 Ceded Territory of northeastern Minnesota (see Figure 1). For more information regarding the 1854 Ceded Territory, please refer to the Predicted Environmental Consequences section below.

PolyMet currently owns a portion of the non-federal lands proposed for exchange; however, all rights, titles, and interests of the remaining non-federal lands proposed for exchange have been assigned to PolyMet. All of the non-federal lands except Tract 4 have severed mineral and surface ownership, which means that the mineral resources would not be acquired with the surface. There are no mining activities proposed on the non-federal lands as part of the Land Exchange Proposed Action. The lands acquired would become part of the Superior National Forest and would be managed under the 2004 Superior National Forest Land and Resource Management Plan (Forest Plan).

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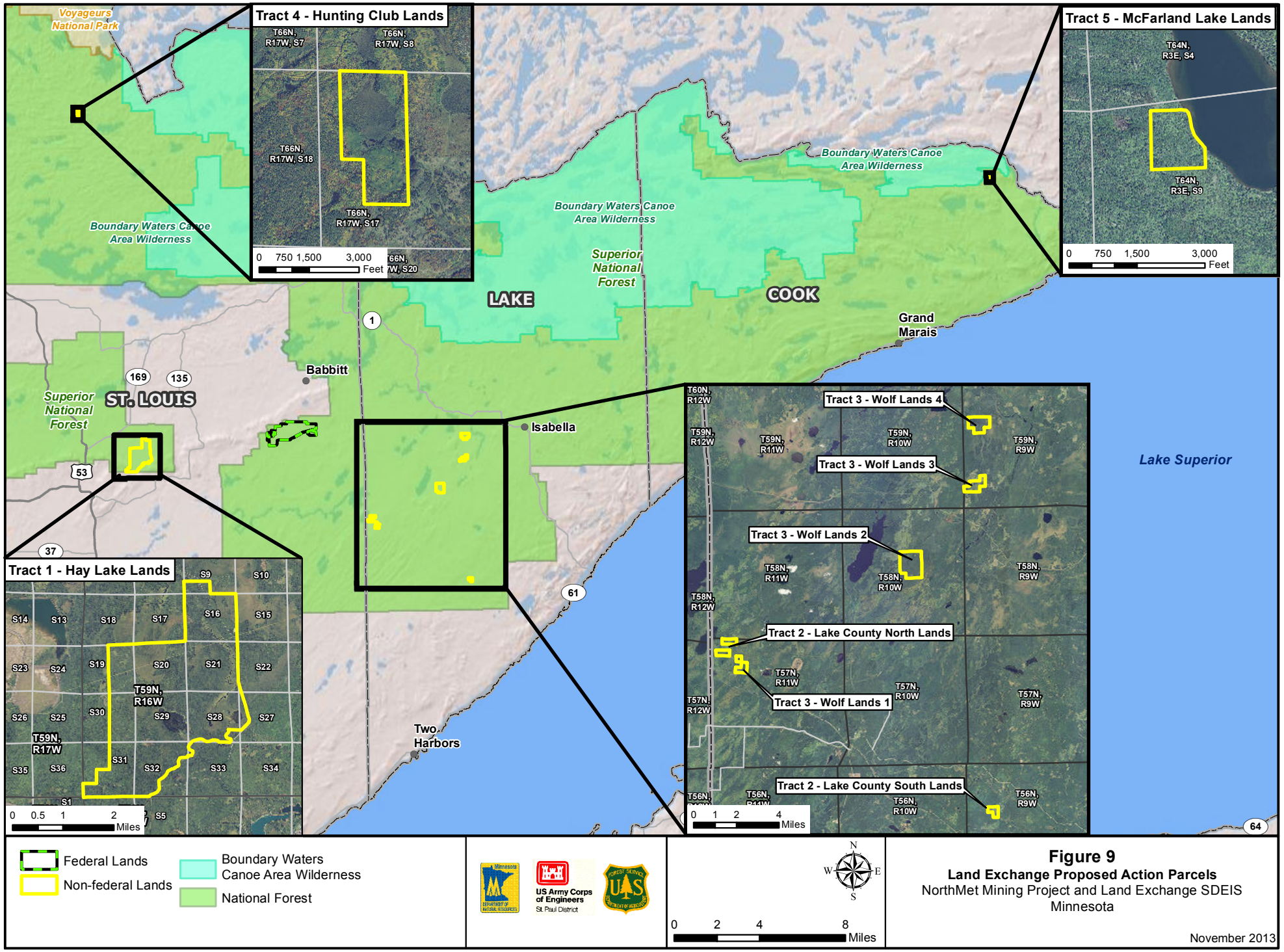

Figure 9

Land Exchange Proposed Action Parcels

NorthMet Mining Project and Land Exchange SDEIS

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PREDICTED ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED CONNECTED ACTIONS

Although the NorthMet Project Proposed Action would take place in a region that has been used for mining and timber production for over 100 years, it also contains many important recreational, cultural, and natural resources. The SDEIS describes in detail those elements of the natural and human environment that would be affected by the NorthMet Project Proposed Action and Land Exchange Proposed Action. Based on the results of modeling and impact analysis, the NorthMet Project Proposed Action would not exceed applicable environmental evaluation criteria except for two water constituents as a side effect of the project. The following section briefly describes some of the critical environmental effects predicted as a result of the NorthMet Project Proposed Action and Land Exchange Proposed Action.

NorthMet Project Effects on Water Resources

The NorthMet Project Mine Site drains to the Partridge River and the Plant Site drains to the Embarrass River. Both rivers are tributaries to the St. Louis River, which flows to Lake Superior. These rivers are not located within the Hudson Bay Watershed and do not flow to, and would not affect the quality of, the waters of the BWCAW.

Several groundwater, surface water, and water quality models (MODFLOW, XP-SWMM, and GoldSim, respectively) were used to predict the hydrologic and water quality effects of the NorthMet Project Proposed Action. The water quality model, which was run at monthly time steps for 200 years for the Mine Site and 500 years for the Plant Site, performs probabilistic simulations, taking into account the uncertainty around many of the model input assumptions. The Co-lead Agencies have selected the 90th percentile probability (P90) as its evaluation threshold in determining whether the model results meet established evaluation criteria. This means that there is at least a 90 percent probability that a constituent would not exceed the evaluation criteria.

With the proposed design modifications and engineering controls, the water quality model predicts that the NorthMet Project Proposed Action would not cause or increase the magnitude of an exceedance of the groundwater and surface water evaluation criteria at the P90 level for any of 28 solutes at 29 evaluation locations, with the following two exceptions:

- Aluminum – Water quality model results predict that aluminum concentrations would increase the existing surface water exceedance at five evaluation locations north of the Tailings Basin in the Embarrass River watershed. This increase in aluminum concentrations would be a side effect of the NorthMet Project Proposed Action due to the capture of Tailings Basin seepage with low aluminum concentrations by the groundwater containment system. Capture of the seepage would result in less dilution, increasing the proportion of non-contact surface water runoff with higher natural aluminum concentrations reaching the streams. The greatest increases in aluminum concentration for all of these evaluation locations would

occur during reclamation, when water from Colby Lake with higher aluminum concentrations would be used for flow augmentation. Therefore, the increase in the magnitude of the aluminum exceedance at these Plant Site evaluation locations is not attributable to process water from the NorthMet Project Proposed Action (i.e., is attributable to non-contact stormwater runoff and Colby Lake water).

- Lead – Water quality model results predict an exceedance of the lead surface water evaluation criterion in Unnamed Creek (PM-11) and Trimble Creek (TC-1 and PM-19) north of the Tailings Basin. These exceedances would be a side effect of the NorthMet Project Proposed Action due to the reduction in surface water hardness. This would result from the capture and removal of dissolved solids by the Plant Site WWTP and the associated decrease in the hardness-based lead evaluation criterion. The WWTP effluent would meet the water quality evaluation criteria, but exceedances would infrequently occur when stormwater runoff mixes with the WWTP effluent and lowers hardness more than it dilutes lead concentrations.

The engineering controls would not result in significant changes to sulfate concentrations in the Partridge River, but would significantly decrease sulfate concentrations in the Embarrass River. Furthermore, the engineering controls would provide a high degree of reliability and flexibility to ensure that the evaluation criteria for sulfate would continue to be met in the future.

Nearly all contact or process water at the NorthMet Project area would be treated at the Mine Site WWTF or Plant Site WWTP before release to the environment. At the Mine Site, about 10 gallons per minute of untreated water would be released during closure (all related to groundwater seepage), which represents less than 5 percent of total Mine Site water releases. At the Tailings Basin, about 21 gallons per minute of untreated water would be released during closure (all related to Tailings Basin seepage that bypasses the groundwater containment system), which represents less than 1 percent of total Tailings Basin water releases. The NorthMet Project Proposed Action is also not predicted to result in any significant changes to groundwater and surface water flows when compared to existing conditions.

Mercury is another constituent of concern, primarily because many of the lakes and rivers in the area are currently classified as "impaired waters" by the MPCA due to elevated mercury content in fish tissue. The NorthMet Project Proposed Action is located within the Lake Superior Basin and would be subject to the Great Lakes Initiative (GLI) mercury discharge standard of 1.3 nanograms per liter (ng/L). The NorthMet ore and waste rock contain trace amounts of mercury; however the mass balance modeling and analog data from other natural lakes and mine pit lakes in northeastern Minnesota suggest that the mercury concentration in the West Pit Lake, the only surface water discharge at the Mine Site, would stabilize below the GLI standard at approximately 0.9 ng/L. There would also be mercury in the tailings, where about 92 percent of the mercury in the ore is predicted to remain in the ore concentrate. The mercury concentration in seepage from the Tailings Basin is anticipated to be below the GLI standard. The NorthMet Project Proposed Action is predicted to increase mercury loadings in the Embarrass River Watershed but decrease mercury loadings in the Partridge River. The net effect of these changes would be an overall reduction in mercury loadings to the downstream St. Louis River.

The BWCAW and Voyageurs National Park are located in a different watershed than the NorthMet Project area, and lie 20 miles and 50 miles away, respectively. The NorthMet Project Proposed Action would not directly, indirectly, or cumulatively affect the water quality of these areas.

NorthMet Project Effects on Biological Resources

Direct and indirect effects to wetlands would result from mining operations. The NorthMet Project Proposed Action would directly affect 912.5 acres of wetlands located within the NorthMet Project area, mostly within the Mine Site, as a result of activities such as filling, excavation, and installation of a containment system within the wetland boundary, and, therefore, these wetlands would be permanently lost. Direct effects would occur on the following wetland types: coniferous bog, shrub swamp, coniferous swamp, shallow marsh, deep marsh, sedge/wet meadow, hardwood swamp, and open bog.

Wetlands were determined to be fragmented and their associated remaining acreage included as an indirect wetland effect if they were small remnants of a directly affected wetland located between NorthMet Project area features (e.g., in the area between the Category 1 Stockpile and the West Pit or along Dunka Road or the Railroad Connection Corridor).

The overall wetland mitigation strategy for the NorthMet Project Proposed Action would be to compensate for unavoidable wetland effects in-place (within the same 8-digit Hydrologic Unit Code), in-kind where possible, and in advance of effects when feasible. The USACE St. Paul District has not made a final determination of the compensation ratios that would be required for the NorthMet Project Proposed Action. The final decision on compensatory mitigation ratios will be determined at the time of the decision on the DA permit and would be based on current District guidance. PolyMet would ultimately need to satisfy both the federal and state mitigation requirements.

Compensatory mitigation would be required for the 912.5 acres of wetlands that would be directly affected. Depending on the location, type, and timing of compensatory mitigation, the minimum required amount of replacement wetlands for direct effects could potentially range from 912.5 acres up to 1,825.0 acres (i.e., compensation ratios of 1:1 up to 2:1). In addition, compensatory mitigation for the 26.9 acres of wetland fragmentation would be provided up front. Due to both on- and off-site limitations and technical infeasibility, it is not practicable to replace all affected wetland types with an equivalent area of in-kind wetlands. During reclamation, approximately 101.8 acres of wetlands would be established on site at the Mine Site and may be eligible for compensation credit pending successful outcomes during reclamation.

Proposed off-site wetland compensation of 1,631.4 acres could provide 1,568.0 wetland mitigation credits. In addition, a total of 225.0 acres of upland buffer areas are proposed to be established with native vegetation around the wetland restoration areas. In accordance with USACE guidelines, credit for the upland buffer areas would be at a 4:1 ratio, resulting in an additional 56.3 credits. The total off-site mitigation could provide 1,624.2 wetland mitigation credits. Actual compensatory ratios determined during permitting may vary from these assumptions. The determination of final mitigation credits required to offset the effects of the NorthMet Project Proposed Action would be determined by the agencies during wetland permitting.

Wetlands that were not filled or excavated (permanently lost), but having a reduced function or value, would be considered indirectly affected. Indirect effects on wetlands from the NorthMet Project Proposed Action would result from one or more of the following six factors: 1) wetland fragmentation, 2) change in wetland hydrology resulting from changes in watershed area, 3) changes in wetland hydrology due to groundwater drawdown, 4) water quality changes related to deposition of dust, 5) water quality changes related to ore spillage along the Transportation and Utility Corridor, and 6) changes in water quality related to leakage from stockpiles or mine features and seepage from mine pits.

Wetland mitigation for potential indirect wetland effects would be determined by the agencies during permitting. If the NorthMet Project Proposed Action were to be permitted, mitigation for indirectly affected wetlands would be determined through monitoring. Additional compensation may be required if determined necessary based on monitoring results.

Wetland hydrology monitoring would be conducted during the operations phase of the NorthMet Project Proposed Action to document indirect effects on wetlands. Prior to the start of the NorthMet Project Proposed Action, monitoring would be established based on permit conditions. The monitoring would describe the purpose, methods, and criteria to be implemented to document indirect effects on wetlands. The vegetation would also be monitored, and additional monitoring locations may be considered during permitting. A component of the monitoring plan would be based on those wetlands that would have a high likelihood of indirect effects as a result of groundwater drawdown. In the event that the wetland monitoring identified additional indirect effects, appropriate measures (i.e., adaptive management practices), such as hydrologic controls or additional compensatory mitigation, would be implemented. Permit conditions would likely include an adaptive management plan to account for any additional effects that may be identified during annual monitoring and reporting.

For vegetation, the NorthMet Project Proposed Action would directly affect up to 1,741.1 acres of Minnesota Biological Survey Sites of High Biodiversity Significance, 698.2 acres of “imperiled” or “vulnerable” native plant communities, and 2 acres of “widespread and secure” native plant communities. Disturbed areas would be reclaimed during operations and at closure. Reclamation objectives would include rapidly establishing a self-sustaining plant community, controlling air emissions, controlling soil erosion, providing wildlife habitat, and minimizing the need for maintenance. Seed mixes and methodologies would be designed to minimize the introduction of invasive species. Reclamation seed mixes would be approved during permitting.

There are no federally listed plant species in the NorthMet Project area. There are 11 state-listed plant species, all at the Mine Site; nine species would be directly affected and two would be indirectly affected by the NorthMet Project Proposed Action.

There are no federally or state-listed threatened or endangered fish or macroinvertebrate species known to occur in the NorthMet Project area. The NorthMet Project Proposed Action could potentially affect aquatic physical habitat via changes in streamflow, affect riparian and aquatic connectivity via construction activities within the riparian zone, and affect water quality by increasing solute concentrations above Class 2B (aquatic life) standards. As a result of these changes, the NorthMet Project Proposed Action could potentially

affect special status species (i.e., federally or state-listed threatened and endangered species, Regional Forester Sensitive Species [RFSS], and MDNR Species of Greatest Conservation Need [SGCN]).

The NorthMet Project Proposed Action would reduce water flows in several tributary streams to the Partridge and Embarrass rivers, but the flows would remain within the range of annual natural variability. Therefore, changes in flow are not anticipated to result in any measurable effects on existing aquatic habitat in any streams downstream of the NorthMet Project area.

Water quality modeling predicts that the NorthMet Project Proposed Action would not cause an exceedance of the Class 2B (aquatic life) water quality standards, with the exception of aluminum and lead not attributable to process water from the NorthMet Project Proposed Action (i.e., attributable to non-contact stormwater runoff and Colby Lake water). In a few cases where solute concentrations naturally exceed the Class 2B standards in NorthMet Project area waters (i.e., aluminum, iron, and manganese), the NorthMet Project Proposed Action would either reduce or not measurably increase concentrations of these solutes.

One federally listed wildlife species, the Canada lynx, may be affected by localized direct decrease and fragmentation of designated critical habitat. The Canada lynx may also be affected by the increased, but low, potential for incidental take resulting from vehicular collisions due to increased project-related traffic. Restoration of disturbed areas as part of mine closure would potentially create lynx habitat, although this successional process could take decades. The state-listed bald eagle, which is also protected under federal law (although it is not a federally listed threatened or endangered species), would not be affected. Four additional state-listed species—including the gray wolf, eastern heather vole, wood turtle, and yellow rail—may be affected by the NorthMet Project Proposed Action. RFSS, and MDNR SGCN and other wildlife species, including those considered culturally significant, may be affected by increased human activity, noise and vibration, rail and vehicle traffic, or decrease of habitat.

Rulemaking was conducted with the intent to update the list of Endangered, Threatened, and Special Concern species (*Minnesota Rules*, parts 6134.0100 to 6134.0400), with new listings becoming effective on August 19, 2013. The FEIS will consider any new listings, or changes in the previous listings, associated with the updated list.

NorthMet Project Effects on Cultural and Socioeconomic Resources

The NorthMet Project area is located within the territory ceded by the Chippewa of Lake Superior to the United States in 1854. The Chippewa reserve rights to hunt, fish, and gather on lands in the 1854 Ceded Territory. Harvest levels and other activities are governed by either individual tribal entities (in the case of the Fond du Lac Band) or the 1854 General Codes and subsequent Amendments under the 1854 Treaty Authority (in the case of the Grand Portage and Bois Forte bands).

Pursuant to Section 106 of the National Historic Preservation Act, the federal Co-lead Agencies identified several historic properties in consultation with the State Historic Preservation Office (SHPO) and the Bands. The federal Co-lead Agencies have consulted with the SHPO and the Bands concerning the eligibility of the Sugarbush (maple sugar camp site), a segment of the *Mesabe Widjiu* (or Laurentian Divide, which

is regarded as culturally significant to many Ojibwe Bands), a segment of the Beaver Bay to Lake Vermilion Trail, the Erie Mining Company Railroad Mine and Plant Track, and the Erie Mining Company Concentrator Building. The federal Co-lead Agencies are currently refining statements of significance and boundaries for some of these properties.

Preliminary effect determinations have been drafted by the federal Co-lead Agencies for review and comment by the Bands and the SHPO. The federal Co-lead Agencies believe that there would be no adverse effect on the Sugarbush or the Erie Mining Company Railroad Mine and Plant Track. A segment of the *Mesabe Widjiu*, a segment of the Beaver Bay to Lake Vermilion Trail, and the Erie Mining Company Concentrator Building, however, would be adversely affected by the NorthMet Project Proposed Action. These preliminary determinations will be used to facilitate ongoing consultation with the Bands and SHPO pertaining to the application of adverse effect criteria to these properties. Mitigation measures to resolve adverse effects would be identified after consultation on the final effects determinations and consideration of any measures to avoid or minimize adverse effects.

Natural resources and the lands on which they are gathered are important to the Bands for a number of reasons, including their cultural, spiritual, and/or historic meanings, and will be considered under federal agency tribal trust responsibilities as outlined above and also as cultural resources under NEPA.

The Arrowhead region of northeastern Minnesota is home to communities that are economically dependent on the natural environment for their existence. Given the region's location in an historic mining district, many towns and cities have provided and continue to provide workers and services to the local mines. Other communities closer to the BWCAW and Voyageurs National Park primarily serve the needs of recreational users (see Figure 1).

According to PolyMet, the NorthMet Project Proposed Action would create up to 500 direct jobs during peak construction and 360 direct jobs during operations. These direct jobs would generate additional indirect and induced employment, estimated to be 332 additional construction-phase jobs and 631 additional operations-phase jobs. Indirect and induced effect employment numbers are calculated by IMPLAN and may include temporary, part-time, full-time, long-term, or short-term jobs. While some skilled workers would be involved only temporarily and would possibly relocate from outside the region, the majority of the NorthMet Project Proposed Action-related jobs are expected to be filled by those currently residing in the Arrowhead region.

Federal, state, and local taxes would total an estimated $80 million annually. During operations, there would be approximately $231 million per year in direct value added through wages and rents and $332 million per year in direct output related to the value of the extracted minerals. As with employment, these direct economic contributions would create indirect and induced contributions, estimated at $99 million in value added and $182 million in output.

Other Environmental Consequences of the NorthMet Project

In addition to the effects discussed above, the NorthMet Project Proposed Action would also affect other resources to a lesser degree. For instance, it would contribute criteria air pollutants during construction, mining, and processing activities, though they would be less than applicable

Prevention of Significant Deterioration emissions thresholds. The NorthMet Project Proposed Action would also contribute air pollutants with risk guideline values for assessing potential human health effects (air toxic pollutants) during construction, mining, and processing activities. These pollutants were all found to be below state and federal risk guidelines. Additionally, the NorthMet Project Proposed Action would not adversely affect visibility in nearby Class I areas, such as the BWCAW and Voyageurs National Park. The NorthMet Project Proposed Action would cause noise, affecting some sensitive receptors. Nearby residences or other permanent sensitive receptors would not be affected, and some wildlife may avoid the area at times.

Environmental Consequences of the Land Exchange

The non-federal parcels that would be part of the Land Exchange Proposed Action are largely undisturbed tracts that would be managed under the Forest Plan, which would allow for some timber harvesting under varying rotation periods. For the most part, however, the acquired lands would be left undeveloped and would be open for public use and enjoyment.

The federal lands acquired by PolyMet would largely be used for mining, and would eventually be restored in accordance with the NorthMet Project Reclamation Plan. There is no legal public access to the federal lands via land, so any current public use or exercise of usufructuary rights requires the permission of adjacent private landowners.

Cumulative Effects

In accordance with NEPA and MEPA, this SDEIS contains an analysis of the cumulative effects of the NorthMet Project Proposed Action and Land Exchange Proposed Action. Cumulative effects are defined by the Council on Environmental Quality (CEQ) NEPA regulations as:

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (40 Code of Federal Regulations [CFR] § 1508.7)

The Minnesota Environmental Quality Board's rules at *Minnesota Rules*, Chapter 4410.0200, subparts 11 and 11a, mirror the CEQ's definition of cumulative effects.

To assess cumulative effects, the Co-lead Agencies identified other past, present, and reasonably foreseeable future projects and activities in the region that, when combined with the NorthMet Project Proposed Action and Land Exchange Proposed Action, could incrementally cause cumulative effects. Given the geographic and temporal scale of effects, each component of the NorthMet Project Proposed Action was analyzed.

For example, construction and mining operations would require stripping and excavation of the surface. These activities require heavy equipment and explosives, which would emit air pollutants and noise. The cumulative effects assessment focused on how air emissions travel and may interact with other sources. Air emissions can travel many miles before they are no longer detectable. Hence, the analysis includes the emissions from other projects and activities well beyond the boundaries of the NorthMet Project area. Noise effects from NorthMet Project Proposed Action activities, on the other hand, would dissipate much closer to their source and would not interact with other activities elsewhere in the area.

In summary:

- The Proposed Connected Actions would cause some additive effects on certain resources, such as loss of vegetation and wetlands in the NorthMet Project area, as well as changes in water quality and use, air quality, and increased economic activity for the life of the mine.
- There would be few cumulative effects from the NorthMet Project Proposed Action after proposed mitigation and adaptive management measures are applied. The affected resources included water quantity and quality, air quality, wetlands, and vegetation.
- No Endangered, Threatened, or Special Concern plant or animal species would be cumulatively affected.

ALTERNATIVES

Both federal and state law require agencies to consider alternatives in the EIS.

The EIS process requires the development and consideration of alternatives that could have improved environmental and socioeconomic benefits and still achieve the project Purpose and Need. Alternatives offer decision-makers and the public options to the proposal and include a No Action Alternative that considers the effects that would occur if the proposed project was not implemented.

Alternatives were identified and screened in accordance with the requirements of NEPA (40 CFR 1505.1(e)) and/or Minnesota Environmental Quality Board Rules for MEPA (*Minnesota Statutes*, sections 116D.04 and 116D.045, and *Minnesota Rules*, parts 4410.0200–4410.7500) to determine whether they met prescribed criteria to warrant further consideration in the SDEIS. Screening criteria were developed to account for technical and economic feasibility and consistency with the NorthMet Project Proposed Action's Purpose and Need. The alternatives that satisfied the screening criteria were evaluated in detail as part of the SDEIS. A number of other alternatives were screened throughout the NEPA/MEPA process and have either been incorporated into the NorthMet Project Proposed Action by PolyMet or have been eliminated from detailed analysis because they did not meet the screening criteria. Early alternatives incorporated into the NorthMet Proposed Action included enhanced waste management at the Mine Site, where the most reactive waste would now be ultimately backfilled and covered with water in the East Central Pit, and enhanced engineering design to capture and treat affected water from the Mine Site and Tailings Basin.

Alternatives considered but eliminated from further consideration included alternative wet and dry closure options for the Tailings Basin, backfilling the West Pit with Category 1 waste rock, and underground mining.

Two alternatives to the Proposed Connected Actions are analyzed in detail in the SDEIS:

- Proposed Connected Actions Alternative B, which would involve the NorthMet Project Proposed Action, but a smaller-scale land exchange component; and

- No Action Alternative, under which neither the NorthMet Project Proposed Action nor the Land Exchange Proposed Action would occur.

Proposed Connected Actions Alternative B

Proposed Connected Actions Alternative B would involve the NorthMet Project Proposed Action as previously described and a land exchange involving a smaller federal parcel (see Figure 10). Compared to the Land Exchange Proposed Action, Land Exchange Alternative B would convey fewer acres of federal land (4,900.7 [GLO] acres) for fewer acres of non-federal land (4,651.5 [GLO] acres contained within a single tract).

No Action Alternative

Under the No Action Alternative, the NorthMet Project Proposed Action would not be implemented and no land exchange would take place. The federal government would not exchange lands with PolyMet, and the USFS would continue to manage the lands in accordance with the Forest Plan. Private lands would not be acquired in exchange for the USFS lands at the Mine Site. At the Mine Site, PolyMet would be required under existing exploration approvals to reclaim surface disturbance associated with exploratory and development drilling activities. No further upgrades or new segments would be constructed along the existing power transmission line, railroad, or Dunka Road, which would continue to be used by their private owners. At the former LTVSMC processing plant and Tailings Basin, the land owner, Cliffs Erie, would continue to complete closure and reclamation activities as specified under state permits and plans, and the Cliffs Erie Consent Decree.

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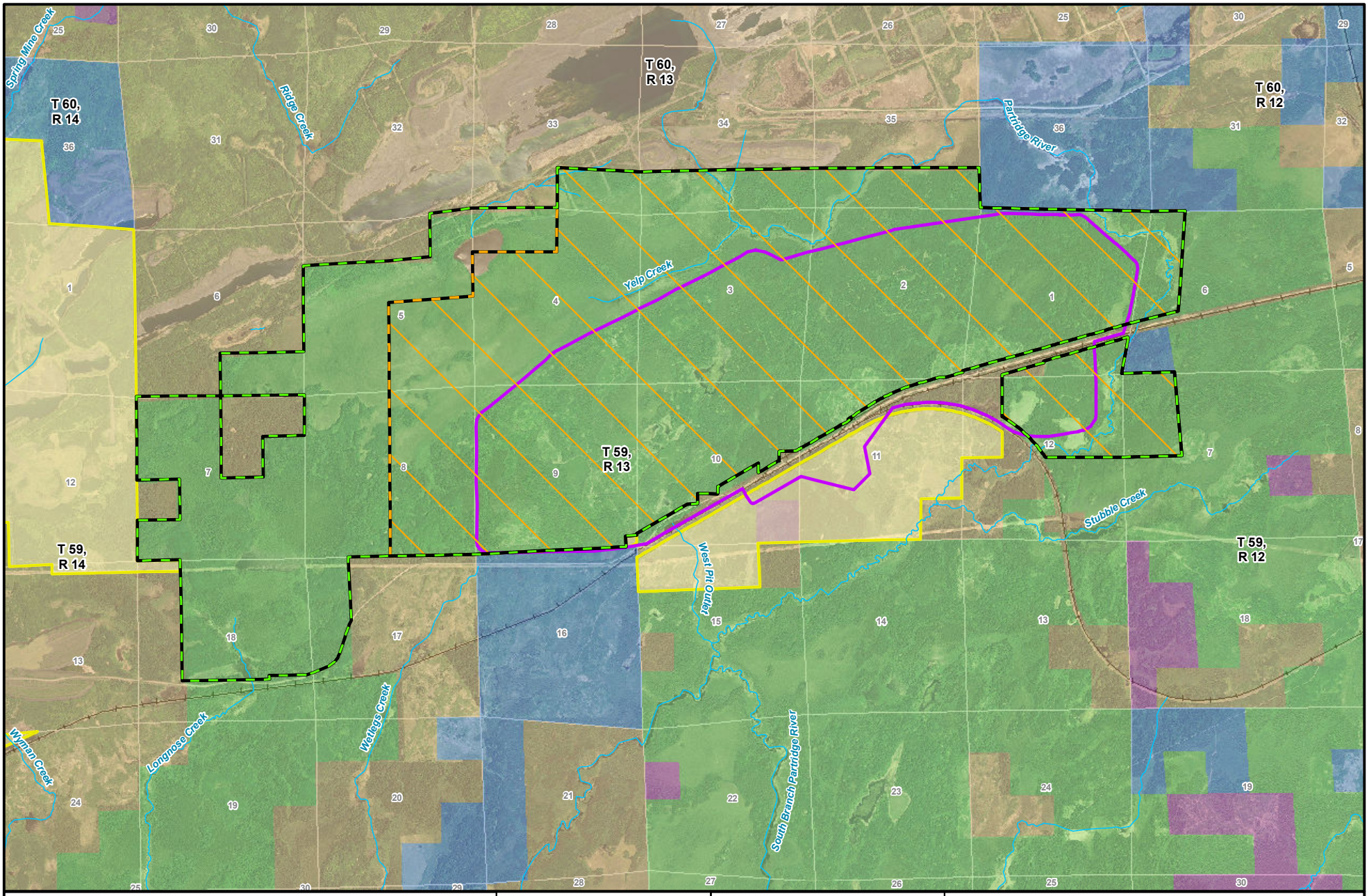

Figure 10
Land Exchange Alternative B
NorthMet Mining Project and Land Exchange SDEIS
Minnesota

November 2013

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Comparison of Effects by Alternative

Table 1 provides a comparison of the effects on resources from the Proposed Connected Actions (NorthMet Project Proposed Action and Land Exchange Proposed Action), Proposed Connected Actions Alternative B, and the No Action Alternative. It is intended to be a brief description of the major effects under the alternatives and not an exhaustive list or in-depth analysis. Chapters 5 and 6 of the SDEIS provide detailed explanations of the predicted direct, indirect, and cumulative effects under these alternatives.

In comparison to the Proposed Connected Actions, the Proposed Connected Actions Alternative B (NorthMet Project Proposed Action and Land Exchange Alternative B) would have the same effects as the NorthMet Project Proposed Action, but fewer lands would be conveyed through the land exchange. The No Action Alternative would not directly affect the existing environment and management of these lands would continue in accordance with their current permits. Compared to the Proposed Connected Actions and Proposed Connected Actions Alternative B, the No Action Alternative would result in active but different comprehensive management of water from the existing LTVSMC Tailings Basin. There would be no other measurable effects on other resources compared to their existing conditions.

Consistent with the CEQ regulations, the federal Co-lead Agencies are required to identify an agency-preferred alternative in a DEIS, if one exists, and in the FEIS, unless another law prohibits the expression of such a preference. At this time, the Co-lead Agencies have not identified a preferred alternative, and for the USACE, Appendix B of 33 CFR Part 325 supersedes the CEQ requirement to identify an agency-preferred alternative. No similar requirement to identify a preferred alternative exists for the MDNR under state law.

Table 1: Comparison of Effects by Alternative

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
Land Use	• No effects on land use that would require changes in ordinances or comprehensive forest plans • Federal lands within the NorthMet Project area would be replaced with acreage of equal value through a land exchange	• Mostly similar effects as Proposed Connected Actions, with fewer federal acres exchanged	• Existing LTVSMC site would be reclaimed in accordance with the reclamation/closure plan
Water Resources	• Greater than 90% of water would be captured and treated to a concentration at or below applicable water quality evaluation criteria • The NorthMet Project Proposed Action would not directly cause or increase the magnitude of an exceedance of the groundwater and surface water quality evaluation criteria, although a project side effect would cause exceedances of aluminum and lead evaluation criteria in tributary streams north of Tailings Basin • Mercury loadings to the Embarrass River would increase slightly, decrease slightly to the Partridge River, with an overall net decrease in NorthMet Project Proposed Action loadings to the downstream St. Louis River. Discharges from the Plant Site WWTP and Mine Site WWTF would be at or below the Great Lakes Initiative discharge standard of 1.3 ng/L • Sulfate concentrations would remain unchanged in the Partridge River and	• Same as under Proposed Connected Actions	• Seepage water quality from the existing LTVSMC Tailings Basin would be expected to improve over time as a result of the Cliffs Erie Consent Decree, other permit requirements (e.g., Permit to Mine), and natural attenuation of contaminants

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
	would be significantly reduced in the Embarrass River • Plant Site WWTP effluent and Colby Lake water would be used to augment flows to tributary streams and wetlands downgradient from the Tailings Basin to offset groundwater seepage captured in the containment system for water quality reasons		
Wetlands and Floodplains	• 912.5 acres of wetlands in NorthMet Project area would be directly affected • 6,498.1 to 7,350.7 acres of wetlands in NorthMet Project area would be indirectly affected • 939.4 acres of directly affected and fragmented wetlands to be mitigated up front • 1,631.4 acres of compensatory off-site wetlands • 505.5-acre net increase of wetlands to the federal estate (through Land Exchange Proposed Action); therefore, Land Exchange Proposed Action conforms to Executive Order (EO) 11990 • 1,401.0-acre net decrease of floodplains to the federal estate (through Land Exchange Proposed Action); however, no decrease in regulatory floodplains, no increase in flood damage potential, and no change in ecological function of floodplain. Therefore, Land Exchange Proposed Action conforms to EO 11988 • Wetland mitigation plan would be	• Same direct and indirect effects and compensatory mitigation at NorthMet Project area as under Proposed Connected Actions • 69.9-acre net increase of wetlands to the federal estate (through Land Exchange Alternative B); therefore, Land Exchange Alternative B conforms to EO 11990 • 1,036.7-acre net decrease of floodplains to the federal estate (through Land Exchange Alternative B); however, no decrease in regulatory floodplains, no increase in flood damage potential, and no change in ecological function of floodplain. Therefore, Land Exchange Alternative B conforms to EO 11988	• No change in wetland or floodplain acreage

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
	implemented to offset increased carbon dioxide emissions to extent practicable		
Vegetation (includes habitat and Special Status Species)	• 4,016.3-acre decrease in vegetation in the NorthMet Project area • Special concern plant species: nine directly affected, two indirectly affected in the NorthMet Project area • 579.6-acre net increase of vegetation land cover types to federal estate (through Land Exchange Proposed Action) • Decrease of 11 plant species, increase of two different plant species to the federal estate (through Land Exchange Proposed Action)	• Same decrease of vegetation in NorthMet Project area as under Proposed Connected Actions • Same effects on plant species in the NorthMet Project area as under Proposed Connected Actions • 173.6-acre net increase of vegetation land cover types to the federal estate (through Land Exchange Alternative B)	• No effects on vegetation
Wildlife (includes Special Status Species)	• 4,016.3-acre decrease of wildlife habitat in the NorthMet Project area • Localized population decrease and fragmentation of critical habitat of the Canada lynx • Low potential for incidental take resulting from vehicular collisions due to increased NorthMet Project Proposed Action-related traffic • Special status species, including SGCN, RFSS, and other wildlife species (such as those considered tribally or culturally significant) may be affected by human activity, noise and vibration, rail and vehicle traffic, and decrease of habitat • Wildlife corridors at and adjacent to the NorthMet Project area would be affected through the reduction of access to these corridors	• Same as under Proposed Connected Actions at the NorthMet Project area • 173.6-acre net increase of vegetation land cover types for wildlife habitat to the federal estate (through Land Exchange Alternative B)	• No effects on wildlife

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
	• 579.6-acre net increase of vegetation land cover types for wildlife habitat to the federal estate (through Land Exchange Proposed Action)		
Aquatic Species	• No effects from changes in stream flow, which would remain within natural variability • No decrease in the Riparian Connectivity Index • Would not directly exceed or increase existing exceedances of Class 2B water quality standards, with the exception of aluminum and lead that is not attributable to process water from the NorthMet Project Proposed Action (i.e., is attributable to non-contact stormwater runoff and Colby Lake water) • No effect on federally or state-listed aquatic species	• Same as under Proposed Connected Actions	• Water seepage from the existing LTVSMC site would be managed in accordance with the Cliffs Erie Consent Decree
Air Quality (includes Greenhouse Gases and Global Climate Change)	• Increased emissions of criteria air pollutants, but below Prevention of Significant Deterioration major source thresholds • Amphibole mineral fiber emissions minimized by installing best available particulate emission control equipment and preventing fugitive dust generation • The air quality of the BWCAW would not be adversely affected by the NorthMet Project Proposed Action	• Same as under Proposed Connected Actions	• Continued air (fugitive dust) effects at LTVSMC site until remediation occurs under closure/reclamation plan
Noise and Vibration	• Added noise emissions and vibration. However, in all cases, the NorthMet Project Proposed Action, during the operations phase, would comply with	• Same as under Proposed Connected Actions	• No effects

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
	the applicable state standards • Noise, ground vibration, and air blast impact area/zone would be limited to 11,456, 11,334, and 11,469 acres, respectively. The BWCAW, which is 20 miles away, is outside the maximum area of audibility (247,612 acres)		
Cultural Resources & Historic Properties	• Adverse effects on the *Mesabe Widjiu* (Laurentian Divide) • Effects, but no adverse effects, on Sugarbush • Adverse effects on the Beaver Bay to Lake Vermilion Trail • Adverse effects on Erie Mining Company Concentrator Building • Effects, but no adverse effects, on Erie Mining Company Railroad Mine and Plant Track • Potential to affect 1854 Treaty resources	• Same as under Proposed Connected Actions	• No effects
Socioeconomics (includes Environmental Justice)	• Up to 500 new direct jobs (maximum during construction), plus additional indirect and induced jobs • Millions of dollars revenue for State of Minnesota and federal taxes • Environmental Justice (Native American) populations affected by changes in subsistence uses and potential increased living costs	• Same as under Proposed Connected Actions	• No effects
Recreation and Visual Resources	• Net increase to the federal estate of recreational land on acquired tracts through Land Exchange Proposed Action • Visual effects would occur, but would	• Fewer federal lands conveyed at NorthMet Project Mine Site under Land Exchange Alternative B • Remaining federal lands at Mine Site would not have public access	• No effects

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
	not exceed USFS standards	• Fewer acres acquired through Land Exchange Alternative B • Same visual resources effects as under Proposed Connected Actions	
Wilderness and Special Designation Areas	• No effects on Wilderness or Special Designation Areas • The air quality of the BWCAW would not be adversely affected by the NorthMet Project Proposed Action	• Same as under Proposed Connected Actions	• No effects
Hazardous Materials	• Potential effects from spills and use of explosives during operations	• Same as under Proposed Connected Actions	• No effects
Geotechnical Stability	• Waste rock stockpiles, Tailings Basin, and Hydrometallurgical Residue Facility would be constructed in accordance with applicable State of Minnesota standards • Monitoring and adaptive management would maintain geotechnical stability	• Same as under Proposed Connected Actions	• Tailings Basin would be subject to closure and reclamation activities in accordance with MDNR requirements

NEXT STEPS

SDEIS Public Review and FEIS

The SDEIS will be issued for public comment for 90 days and public meetings will be held at several locations to solicit additional comments. Notices will be published in newspapers of general circulation in the area of the meeting and on the MDNR's NorthMet Mining Project and Land Exchange EIS Website at: http://www.dnr.state.mn.us/input/environmentalreview/polymet/index.html at least 15 working days prior to the meetings.

The Co-lead Agencies will review the public comments on the SDEIS, continue to coordinate and consult with the Cooperating Agencies, and issue an FEIS for public review.

Agency Use of the FEIS in Decision-making

The USACE will use the FEIS as the basis for their Record of Decision whether to issue a DA permit for impacts to waters of the U.S. associated with the NorthMet Project Proposed Action. Similarly, the USFS will use the FEIS as the basis for its Record of Decision for the Land Exchange Proposed Action. The MDNR will determine if the FEIS adequately provides the necessary analysis for state and local agencies to issue their respective permits and take resulting actions.

The Land Exchange is subject to the pre-decisional objection regulations at 36 CFR part 218 effective March 27, 2013. Individuals and entities who provide specific written comment, as defined in § 218.2, during scoping or the comment period will be eligible to participate in the objection process.

Permits and Approvals

PolyMet must obtain the required federal, state, and local permits and approvals summarized in Table 2 below.

State law requires that PolyMet provide financial assurance before a Permit to Mine can be granted. Financial assurance instruments, such as bonds or trust funds managed by the state, would pay the estimated cost of reclamation, should the mine be required to close for any reason at any time or the company is not able to complete its obligations under the Permit to Mine.

Table 2: Key Government Permits or Actions

Agency	Permit/Action	Reason Permit or Action is (or may be) Needed
Federal		
USACE	Department of the Army Permit	For affected waters within the jurisdiction of the USACE under the CWA, 40 CFR Part 230: Section 404(b)(1)
	Section 106 NHPA Compliance (Minnesota Historic Preservation Office)	Necessary due to the NorthMet Mining Project and Land Exchange being a federal undertaking, 36 CFR Part 800
U.S. Fish and Wildlife Service	Section 7 Endangered Species Act (ESA) Compliance	Necessary due to the NorthMet Mining Project and Land Exchange being a federal undertaking, 50 CFR 402
USFS	Land Exchange	To resolve the conflict between surface and mineral estates
	Section 106 NHPA Compliance (Minnesota Historic Preservation Office)	Necessary due to the NorthMet Mining Project and Land Exchange being a federal undertaking, 36 CFR Part 800
State		
MDNR	Permit to Mine	Required for all nonferrous metallic mining operations, *Minnesota Rules*, chapter 6132
	Endangered Species Taking Permit (if required)	If there are state-listed species that may be taken by the NorthMet Project Proposed Action, *Minnesota Rules*, parts 6212.1800-6212.2300 and 6134
	Water Appropriations Permit for plant make-up water	For withdrawal of water from Colby Lake for plant make-up water; for mine dewatering; for stream augmentation; *Minnesota Rule*s , part 6115
	Dam Safety Permit	For the Tailings Basin, Hydrometallurgical Residue Facility, and potentially the water retention dikes at the Mine Site (e.g., water treatment plant pond dikes), *Minnesota Rules*, parts 6115.0300-6115.0520
	Permit for Work in Public Waters	For possible modifications and diversions of local streams in constructing the West Pit outfall; *Minnesota Rules*, part *6115*
	Wetland Replacement Plan approval under WCA	For affected wetlands within the scope of the WCA or that constitute "public wetlands"
	Burning Permit (if required)	If vegetative material would need to be burned on site during times with no snow cover

Agency	Permit/Action	Reason Permit or Action is (or may be) Needed
MPCA	Section 401 Water Quality Certification/Waiver	Required in conjunction with the DA Permit (Section 404 Permit)
	National Pollutant Discharge Elimination System and State Disposal System (NPDES/SDS) Permits	For construction and industrial activity that would disturb 1 acre or more of land, and the management, treatment and/or discharge of process wastewater to surface water or groundwater
	Solid Waste Permit	For construction debris
	Air Emissions Permit (Part 70 Permit)	For emissions of regulated air pollutants
	Waste Tire Storage Permit	For storage of waste tires generated from NorthMet Project-related vehicles (if required)
	General Storage Tank Permit	For multiple NorthMet Project Proposed Action aboveground storage tanks
MDH	Radioactive Material Registration	For measuring instruments
	Permit for Non-Community Public Water Supply System and a Wellhead Protection Plan (if proposed)	Existing Plant Site potable water treatment plant to be refurbished
	Permit for Public On-site Sewage Disposal System	For sewage waste generated during construction and operation that would be disposed of on site
Local		
City of Hoyt Lakes	Zoning Permit	To acknowledge NorthMet Project Proposed Action is an allowable use within the zoned district
City of Babbitt	Building Permit	New construction would occur on portions of the NorthMet Project area within the incorporated limits of the City of Babbitt
St. Louis County	Zoning Permit	To acknowledge NorthMet Project Proposed Action is an allowable use within the zoned district